

**UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF WISCONSIN**

NATIONAL GRAPHICS, INC.,
A Wisconsin Corporation,

Plaintiff,

v.

TRAVEL TAGS, INC., d/b/a
XTREME GRAPHICS,
A Minnesota Corporation,

Defendant.

Civil Action No. 04-C-0013

Judge Lynn Adelman

DEFENDANT'S MARKMAN BRIEF
ON CLAIM CONSTRUCTION

I. INTRODUCTION

Plaintiff, National Graphics, Inc. ("National Graphics"), talks the talk of proper claim construction in its recitation of case law. However, its analysis does not walk the walk. National Graphics' convoluted claim constructions fail to follow governing case law, arbitrarily define terms with no apparent source, improperly ignore the language of the specification and claims, and attempt to recapture claim scope given up during the prosecution of the patents.

Defendant, Travel Tags, Inc. ("Travel Tags") proposes claim constructions using plain and ordinary meanings, consistent with the specification and prosecution history, except where the patentee has either specifically defined or limited the breath of some claim terms. Travel Tags also demonstrates that some claims require steps to be performed in sequence.

The five patents in suit can be divided into three categories: (1) methods of producing lenticular images, (2) a method for putting a lenticular image on a curved surface, and (3) a method for making molded articles having a lenticular image on its surface. The terms that Travel Tags contends are in dispute for the five patents are (1) "compressing the frames," (2) "frame,"

(3) "nonbinary pixels," (4) "binary pixels," (5) "moiré interference," (6) "screen interference," (7) "each frame," (8) "rasterize," (9) "convert," (10) "interlacing the frames in the desired sequence of step (B)," (11) "determining," (12) "a base resolution," (13) "a resolution of the lens when the lens is configured to conform to the curved surface," (14) "interlaced image," (15) "manipulating the interlaced image," (16) "to conform with the resolution of the lens as applied to the curved surface," (17) "such that the lenticules of the lens are in correspondence with the segments of the image," (18) "minimizes any distortion to the lenticular lens and any degradation to the interlaced image," and (19) "turbulence." A summary of these terms and their proposed constructions is provided at Exhibit A of the Declaration of Deakin Lauer (hereinafter "Lauer Decl.").

II. FACTUAL BACKGROUND

The written descriptions, along with the claims for each patent, put the world on notice as to what has been invented. The purpose of the written description is to describe the invention, to include the preferred embodiments, and to describe how to make and use the patented invention. This description provides the public with the information it needs to understand the scope of the claims and practice the invention. See Nat'l Recovery Techs. v. Magnetic Separation Sys., 166 F.3d 1190, 1195-6 (Fed. Cir. 1999).

Lenticular technology has been around since the early 1900s. As discussed in detail below, the patents in suit acknowledge that a number of ways to produce a lenticular image were developed before the patents in suit were filed. Computers have made the process considerably easier, in particular the processing of images that need to be thinly sliced, rearranged, and further adapted for lenticular viewing.

A. National Graphic's Patents Directed to Methods of Producing Lenticular Images

Three of the five patents in issue relate to a method for producing lenticular images: namely U.S. Patent No. 5,488,451 (the "'451 patent") (Lauer Decl. Ex. B), U.S. Patent No. 5,617,178 (the "

'178 patent") (Lauer Decl. Ex. C), and U.S. Patent No. 5,847,808 (the "'808 patent" (Lauer Decl. Ex. D)). They are analyzed in this section.

Other than the claims, the written descriptions for the '451, '178, and '808 patents are virtually identical. The '178 patent claimed priority based on the filing date for the application for the '451 patent, and the '808 patent claimed priority from the application for the '178 patent.

1. The '451 Patent

The '451 patent is entitled, and purportedly describes, a "method of producing multidimensional lithographic separations free of moiré and screen interference." (col. 7, ll. 42-43).¹ Multidimensional lithographic separations refer to lenticular images that have been printed by lithography, a type of printing. (col. 1, ll. 16-55).

a. The specification acknowledges that the creation and printing of lenticular images was known

The specification and claims of the '451 patent describe the invention as including several steps. A plurality of electronic frames are created, then ordered in the desired sequence that depicts the desired depth or motion effect. (col. 1, ll. 66-67). Next, each frame is "rasterized," or converted into nonbinary pixels. (col. 2, l. 1). Each rasterized frame is compressed so that little or none of the frame information is lost. (col. 5, ll. 9-11). The compressed frames are then formed into a lenticular image (i.e., interlaced) and printed by the lithography process. (col. 2, ll. 10-14).

The specification acknowledges that the prior art taught sophisticated, software-based techniques for lenticular printing. For example, the written description describes the existing use in the prior art of lenticular lenses (col. 3, l. 23), the prior art conversion of conventional art into electronic data (col. 3, ll. 1-4), the creation of an electronic page using commercially available software such as QuarkXPress (col. 4, ll. 25-29), saving the electronic pages using commercially

¹ All column and line cites in this section are to the '451 patent (Lauer Decl., Ex. B). However, the specifications of the '178 and '808 patents are nearly identical to the specification of the '451 patent and, therefore, contain similar statements.

available software such as PostScript™ (col. 4, ll. 36-38), rasterizing the assembled page using previously-available raster imaging processing (RIP) software such as Freedom of Press Pro™ (col. 4, ll. 43-48), and laminating the created print to the lenticular lens using any conventional technique. (col. 6, l. 38-40).

Thus, the invention of the '451 patent cannot lie in the creation and printing of lenticular images alone. As best understood by Travel Tags, and to the extent that the '451 patent recites anything novel at all, the inventive aspect of the '451 patent must lie in the following: (1) the order of the recited steps, (2) formulas for rasterization and compression, and (3) the use of stochastic screening to eliminate moiré and screen interference.

b. The order of performance of the steps in the claims

The steps in the claims are consistently described in the specification as occurring in a fixed order. For example, the frames are "first created electronically" (col. 3, l. 3), then "once in electronic form" they are ordered into a sequence (col. 3, l. 5-6). "[A]fter ordering" each frame is "rasterized, compressed, and then converted from nonbinary pixels to binary pixels" (col. 3, ll. 8-9). "Once converted the frames are then interlaced," to "form a composite picture or image," (col. 3, ll. 10-12). "[T]hen the composite picture" is outputted. (col. 3, ll. 13-14). Further references to this order are identified in the Discussion section below.

c. Rasterization and compression formulas

The patentee further provides mathematical conversion formulas. One is the rasterization formula wherein the number of frames or pictures from which the composite image is to be created is multiplied by the lenticules per unit length. Specifically the rasterization resolution is equal to $l * f$ where f is the number of frames in the lithographic separation and l is the line count of the lenticular lens. (col. 4, ll. 52-62). For example, if 16 frames are to be interlaced for a lens having 75 lenticules per inch (both typical numbers), the rasterization resolution would equal $16 * 75$, or

1200 pixels per inch. This ensures that when slices of each of the 16 frames are arranged under one of the lenticules, each slice will have one pixel.

The other formula recited in the claims relates to compression of individual frames. Compression is defined as "the reciprocal of the number of frames per line or lenticule, i.e.,

$$\text{Compression} = 1/f$$

Where f is the number of frames-in (sic) the composite image." (col. 5, ll. 3-9). For example, if 16 frames are to be interlaced, each one is compressed to 1/16 of its original size. The rasterization resolution formula and compression formula are specifically recited in the written description of the '451 patent and required in the '451 patent claims.

d. Stochastic screening to eliminate moiré and screen interference

The claims of the '451 patent are directed to a method of creating a lenticular image using a computer, the created lenticular image being free from moiré and/or screen interference. (col. 7, l. 42-43). The specification defines moiré interference is as the pattern that results from the overlapping of two or more grid patterns including halftone dots in a film separation. (col. 3, ll. 50-53). Screen interference is defined as the "broken appearance of detail, lines or image edges cause by halftone dots that are too coarse in comparison to the line or edge being drawn by the halftone dots." (col. 3, ll. 53-56). Generally, such interference is undesirable because it distorts the appearance of the image. An example of moiré interference is shown in the image below on the right, and is compared to the same image without moiré interference. See <http://www.guides.sk/scantips2/basics06.html>.

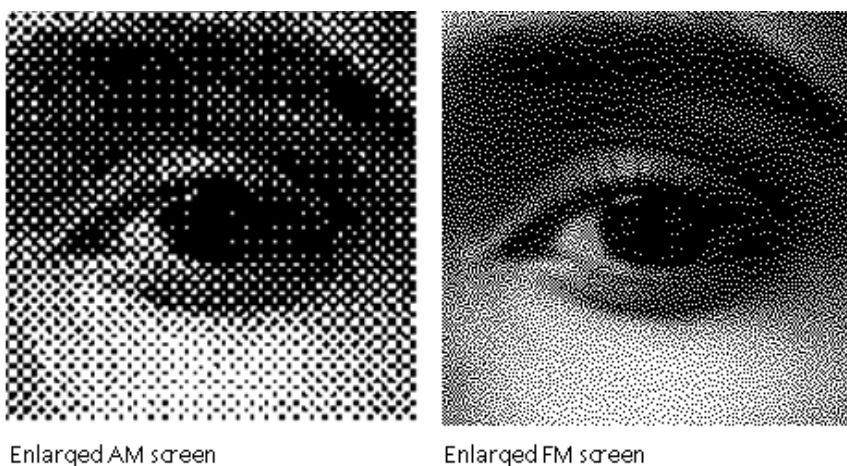


Image without moiré interference

Image with moiré interference

As part of the method, these compressed frames are "then" converted into binary pixels to allow the use of stochastic screening, also called frequency modulation, techniques. (col. 5, ll. 17-48). Stochastic screening is contrasted with "conventional halftone screening" because such conventional screening "can create moiré problems" and "can result in a rosette pattern, . . . creating screen interference." (col. 5, ll 17-48). Thus, the '451 patent describes as the invention a method using stochastic screening to create a better-looking lenticular image, one that is free from moiré and screen interference (as the title indicates).

Creating images free of moiré and screen interference is critical to the '451 patent. Every claim, as well as the title, requires that the image be "free of moiré and screen interference." Stochastic screening is critical to eliminating interference and to the invention described. "In this invention, stochastic or frequency-modulated techniques are employed which virtually eliminate moiré and screen interference." (col. 3, ll. 65-68) In conventional halftone screening the size of the dots vary while their frequency remains constant. (col. 5, ll. 18-20) This contrasts with stochastic screening in which the frequency of the dots vary, but the size remains the same. (col. 4 ll. 36-38) The difference between halftone screening (amplitude modulation) and stochastic screening (frequency modulation) is demonstrated in the figures below.



Thus in stochastic screening, each dot is the same, either all black or all white, whereas in halftone screening, the dots vary between all white, all black, and all intermediate levels of black or color.

2. The '178 Patent

The written description of the '178 patent is virtually identical to the '451 patent. The only substantive differences are in the claims. The '178 patent comprises two independent claims and one dependent claim. Independent claim 1 of the '178 patent reads virtually identically to independent claim 1 of the '451 patent. The preamble of the '451 patent recites a lithograph "produced and joined" to a lenticular lens, whereas the preamble of claim 1 of the '178 patent recites a lithograph "produced and printed" to a lenticular lens. Claim 1 of the '178 patent also adds the additional step of printing the lenticular image upon the lenticular lens. Independent claim 2 of the '178 patent is a slight variation of independent claim 1 of the '178 patent, substituting the term "image" for the term "lithographic separation."

What did not change in the '178 patent is that the method is consistently described in a fixed sequence, and is described as requiring stochastic screening techniques to avoid moiré and screen interference. Moreover, the rasterization resolution formula ($R = 1 * f$) and compression formula ($C = 1/f$) are again specifically required in all independent and dependent claims.

3. The '808 Patent

The written description of the '808 patent is virtually identical to both the '178 patent and the '451 patent. The '808 patent includes one independent claim and one dependent claim. The claims of the '808 patent focus on producing a "multidimensional image" as compared to a "multidimensional separation" as provided for in both the '451 and '178 patents. The patent claims omit direct references to "individual color plates" required in the nonbinary to binary conversion in all the claims of the '451 and '178 patents. The patent claims also omit direct references to the mathematical formulas found in the written description of the '808 patent and in the claims of the '451 and '178 patents. The '808 claims, like the '451 and '178 claims, provide that the frames are rasterized at a nonbinary pixel resolution, compressed, converted to binary pixels, and interlaced.

B. A Method for Putting a Lenticular Image on a Curved Surface - the '092 Patent

The '092 patent describes a method of placing a lenticular image on a curved surface. What the patent presents as unique is that the method described produces a lenticular image on a multidimensional curved surface that is free of distortion. ('092 patent,² col. 1, l. 66 - col. 2, l. 8). The patent recognizes that placing lenticular images on curved surfaces is known in the art, but emphasizes that efforts to date involved a simple curve such as a cylinder of uniform diameter. (col. 1, ll. 37-45). The patent discusses prior art, U.S. Pat. No. 5,642,226 to Rosenthal (Lauer Decl., Ex. G), which details placing a lenticular image on a cylindrical surface. (col. 1, ll. 52-53). However, according to the patent, what Rosenthal fails to describe is "the significant difference in optical properties of a simple curved surface and a cylindrical surface." (col. 1, ll. 58-60). What the patent states is lacking in the art is the ability to create an image that works with the multiple variables associated with complex curved surfaces such as a cone-shaped cylinder, or even more complex surfaces such as a face-shaped surface. (col. 1, ll. 60-65). "To this end, a method is required for manipulating an image so that when it is applied to a curved, e.g., a frustoconical,

² All column and line cites in this section are to the '092 patent (Lauer Decl., Ex. E).

surface and viewed through a lenticular lens, the image is substantially free of distortion." (col. 2, ll. 2-5).

Accordingly, the specification of the '092 patent distinguishes the teachings of Rosenthal from the claimed invention based on Rosenthal's purported failure to teach the manipulation of images for application to shapes more complex than a simple cylinder. Although the background section of the specification disclaims simple cylinders, the detailed description appears to attempt to include simple cylinders within the subject matter of the claimed invention. (col. 6, ll. 61-63).

According to the patent claims, an image is created in part by determining the base resolution of the lens, determining a resolution of the lens when the lens is applied to the curved surface, and manipulating the interlaced image to conform to the resolution of the lens on the curved surface.

C. A Method for Making Molded Articles Having a Lenticular Image on its Surface

The '196 patent recognizes at the outset that the making of molded articles is "well known in the art." ('196 patent,³ col. 1, ll. 15-16). It also recognizes that placing a decorative surface feature into a mold to make a molded article is well known. (col. 1, l. 59-60). What is discussed as purportedly novel about this invention is the creation of a molded article incorporating a lenticular image in such a way that the optical properties of the lens, and the image itself, are protected from the method of manufacture. (col. 2, ll. 11-14). Specifically, if the molded article is not made properly, the image and lens can be damaged or distorted by the heat, pressure, or path of the molten plastic. (col. 4, ll. 33-39, col. 2, ll. 42-45).

Identifying the novel feature of the '196 patent is particularly difficult, however, as the '196 patent provides very little guidance as to how to perform the claimed method. Instead, the '196 patent generally relies on the ability of one of ordinary skill in the art to determine the specifics.

³ All column and line cites in this section are to the '196 patent (Lauer Decl., Ex. F).

For example, although the specification notes that the placement of injection gates is important to prevent deterioration of the lens and image, the specification simply states:

specific design aspects of the present invention relating to molding technology (i.e., the size, placement and angling of various items, for instances, the runners and gates) can be determined by those of skill in the art of injection molding depending, of course, on the particular project at hand.

(col. 8, ll. 29-52).

According to the claimed method, the temperature, pressure, or turbulence of the molten plastic is introduced such that any distortion to the lenticular lens and any degradation of the interlaced image are "minimized[d]." (claim 1, col. 10, ll. 43-49). Each claim requires this element and the patent claims were only granted by the U.S. Patent and Trademark Office ("PTO") because this requirement was added to the claims to distinguish prior art used to reject the claims without this limitation. (Lauer Decl., Ex. L, pp. 90-105).

III. LAW OF CLAIM CONSTRUCTION

A patent infringement analysis involves two steps: (1) determine the meaning and scope of the patent claims, and (2) compare the properly construed claims to the device accused of infringing the patent. AFG Indus. v. Cardinal IG Co., 239 F.3d 1239, 1244 (Fed. Cir. 2001). The first step, claim construction, is a question of law for the Court. Markman v. Westview Instruments, 52 F.3d 967 (Fed. Cir. 1995) (en banc), aff'd, 116 S.Ct. 1384 (1996). As claim construction affects both validity and infringement, it should not be assumed that broader or narrower construction of any term necessarily favors one party over the other.

A. Claim Term Construction

The Federal Circuit has provided a road map for claim term construction, which is outlined below and is discussed in detail in Texas Digital Systems v. Telegenix, Inc., 308 F.3d 1193, 1201 (Fed. Cir. 2002). While the Federal Circuit is currently considering an en banc review of its claim

construction decisions,⁴ following the Texas Digital road map may increase the likelihood of proper claim construction. That roadmap is as follows: (1) first look to the language of the claims, giving the claim terms their ordinary meaning; and then (2) review the intrinsic record to determine whether the ordinary and customary meaning is rebutted. Id. at 1202, 1204. Conducting these steps in the wrong order "invites a violation of our precedent counseling against importing limitations into the claims." Id. at 1204.

In emphasizing the importance of relying on a term's ordinary meaning, the Federal Circuit has stated:

In construing claims, the analytical focus must begin and remain centered on the language of the claims themselves, for it is that language that the patentee chose to use to 'particularly point[] out and distinctly claim[] the subject matter which the patentee regards as his invention.' 35 U.S.C. § 112, second paragraph. The terms used in the claims bear a "heavy presumption" that they mean what they say and have the ordinary meaning that would be attributed to those words by persons skilled in the relevant art. Moreover, unless compelled otherwise, a court will give a claim term the full range of its ordinary meaning as understood by persons skilled in the relevant art.

Id. at 1201-02 (citations omitted, brackets in original); see also Omega Eng. v. Raytek Corp., 334 F.3d 1314, 1323 (Fed. Cir. 2003).

The patentee may act as his own lexicographer putting forth a definition of the term different than its ordinary meaning. Texas Digital, 308 F.3d at 1204. However, absent such an express definition, dictionaries are "particularly useful" and "always available" to assist courts in determining the ordinary and customary meaning of disputed claim terms. Id. at 1202; TI Group Auto Sys. v. VDO N. Am., L.L.C., 375 F.3d 1126, 1133-34 (Fed Cir. 2004) (citations omitted). The dictionary used should be one available at the time the patent issued. Texas Digital 308 F.3d at 1202-03.

National Graphics does not appear to dispute this law, even citing Texas Digital for the

⁴ Phillips v. AWH Corp., 376 F.3d 1382 (Fed. Cir. 2004).

proposition that dictionaries can be "particularly useful." Nevertheless, it fails to follow this law in its analysis. For example, National Graphics cites no dictionary or other treatise in proposing its definition of terms. Moreover, National Graphics ignores instances where the patentee acted as his own lexicographer, putting forth a controlling definition of a term. Such definitions should be recognized. Texas Digital, 308 F.3d at 1204.

The Court should review the patent specification to determine the ordinary meaning and to determine whether the inventor has used any terms in a manner inconsistent with their ordinary meaning. Id. at 1204; TI Group, 375 F.3d at 1133-34. The specification must also be examined to determine which of the possible dictionary meanings is consistent with the use of the claim term in the context of the claims and the written description. International Rectifier v. IXYS, 361 F.3d 1363, 1370 (Fed. Cir 2004). The presumption that terms carry their ordinary and customary meaning will be rebutted when the patentee has disavowed or disclaimed scope coverage by "using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope." Id. For example, a claim term will not carry its ordinary meaning if the patentee used the term in a different way to distinguish the invention from prior art. CCS Fitness Inc. v. Brunswick Corp., 288 F.3d 1359, 1366 (Fed. Cir. 2001).

The prosecution history should also be considered. The prosecution history contains the record of proceedings before the PTO, including express representations made by the applicant regarding the scope of the claims. Vitronics Corp. v. Conceptronic, Inc., 90 F.3d 1576, 1582 (Fed. Cir. 1996); Texas Digital, 308 F.3d at 1204. The record before the PTO may be of significance if the inventor has made statements during the application process which limit the interpretation of the claims. Markman, 52 F.3d at 967. That occurred in this case and will be discussed in further detail in the following section. Representations made in the prosecution history of one patent in a family,

such as the '451, '178 and '808 family, apply to the same terms in all of the patents. Microsoft Corp. v. Multi-Tech Sys., 357 F.3d 1340, 1349-50 (Fed. Cir. 2004).

The dictionaries and treatises, the patent, and the prosecution history should resolve claim construction in the vast majority of cases. While other extrinsic evidence, such as expert testimony or other documents, may be received for limited purposes, such as providing a general overview of the technology, extrinsic evidence "may not be used to vary or contradict the claim language. Nor may it contradict the import of other parts of the specification." Vitronics, 90 F.3d at 1584 (citing Markman, 52 F.3d at 981). A dictionary or treatise is not excluded from consideration as extrinsic evidence. Vanguard Prods. Corp. v. Parker Hannifin Corp., 234 F.3d 1370, 1372 (Fed. Cir. 2000).

The Canadian file history provided by National Graphics is an excellent example of extrinsic evidence. This Canadian file history has no relevance to the claim interpretation in this case and should not be considered to interpret what is clearly defined by the claim terms and intrinsic evidence. TI Group Auto Sys. v. VDO N. Am., L.L.C., 375 F.3d 1126, 1136 (Fed Cir. 2004); Caterpillar Tractor Co. v. Berco, S.p.A., 714 F.2d 1110, 1116 (Fed. Cir. 1983).

B. Process Claim Steps Must Be Performed in the Recited Order if the Claims Require an Order or the Other Intrinsic Evidence Supports such a Construction

The language of the claim, the specification and the prosecution history can restrict the scope of a method claim to require that the steps occur in the order in which they are recited. Loral Fairchild Corp. v. Sony Corp., 181 F. 3d 1313, 1321-22 (Fed. Cir. 1999). A court must look to the claim language as one source to determine whether as a matter of grammar or logic the steps must be performed in the order written. Id. For example, in Loral, the court recognized that claim language wherein the barrier edges "aligned with edges of the insulation layer," grammatically required that the step of forming the insulation layer had to precede the alignment step. As another example, in Mantech Envtl. Corp. v. Hudson Envtl. Servs., Inc., 152 F.3d 1368, 1375-76 (Fed. Cir. 1998), the second step in the claim introduced acetic acid into the wells and, therefore, the Court

found that "the wells" must have been provided prior to this step. The use of antecedent basis expressions, such as "the" and "said" to refer to an element in subsequent steps in the claim, demonstrates that the previous steps must occur prior to the step using the antecedent basis expressions. In Orsbak v. General Instrument Corp., 2001 U.S. Dist. LEXIS 22671, *7 (N.D. Ill. February 14, 2001),⁵ all but one of the steps in the method used the term "the" which the Court recognized must by necessity refer back to the introduction of the term in a previous step. "Transmitting the multiplexed channels' has to occur after multiplexing takes place, otherwise the reference to "the multiplexed channels" would be meaningless." Id.

In addition to the claim language, the specification and file history should be reviewed to determine whether they directly or implicitly require the steps be performed in the sequence provided. Loral Fairchild, 181 F.3d at 1321-22.

C. The Preamble Can Limit the Claimed Invention When It is Necessary to Give life, Meaning and Vitality to the Claim

Another factor affecting on the possible scope of a claim is the preamble. The preamble limits the invention when it recites essential structure or steps, or if it is "necessary to give life, meaning, and vitality" to the claim. Catalina Mktg. Int'l, Inc. v. Coolsavings.com, Inc., 289 F.3d 801, 808 (Fed. Cir. 2002). When the patentee elects to use both the preamble and the body of the claim to define the claimed invention then the preamble is used to define the invention. Bell Communications Research, Inc. v. Vitalink Communications Corp., 55 F.3d 615, 620 (Fed. Cir. 1995). When terms in the body of the claim rely upon and derive their antecedent basis from the preamble, that is an indication that the preamble is a necessary part of the claimed invention. Eaton Corp. v. Rockwell Int'l Corp., 3223 F.3d 1332 (Fed. Cir. 2003).

⁵ For the Court's convenience, a copy of this decision is included as Lauer Decl., Ex. T.

IV. TRAVEL TAGS' STATEMENT OF CLAIM CONSTRUCTION

A. Construction of Claim Terms and Issues in the Three Image Patents

1. Terms National Graphics Placed in Issue

a. "Compressing the frames"

The first term in dispute is "compressing the frames." This term is used in the asserted claims for all the lenticular image patents. The first step in the claim interpretation analysis is to determine the ordinary and customary meaning of the term. The ordinary and customary meaning of "compressing" is the action of "pressing together, squeezing." The Oxford English Dictionary, p. 633 (2d ed. 1989) (Lauer Decl., Ex. M); see also Webster's Third International Dictionary, p. 467 (1993) (Lauer Decl., Ex. N). An example of such compression is compressed air, which gets "pressed" in a confined chamber. The air molecules are not eliminated from the chamber, but are merely pressed closer together. When the pressure is lifted, the air will expand to its original size.

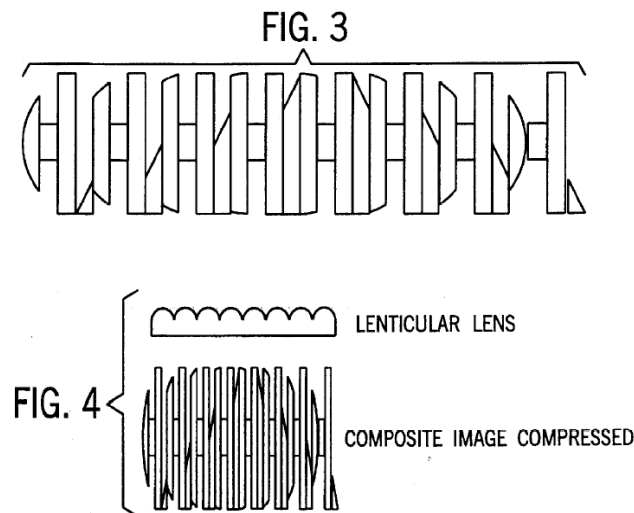
The next step is to determine whether the intrinsic evidence supports this definition, or not. A review of the written description, common to all three patents, demonstrates that compression is applied to the electronic frames that have been rasterized with non-binary pixels. ('451 patent, col. 4, ll. 44-45; col. 5, ll. 1-3). In effect, the pixels of the frames are like the air molecules in the above analogy. The specification explicitly states that the compression must be performed to allow the frame (i.e., the pixels of the frame) to return to its "original size."

This technique retains most, if not all, of the frame information, i.e., little or none of the frame information is lost although some may be subject to minor degradation and when viewed through a lenticule, most, if not all, of the original information in the frame is conveyed to the viewer in an essentially noncompressed state or in other words, in a state in which it has been expanded back to or near its original size.

('451 patent, col. 5, ll. 9-16) Thus, the pixels of the frame are squeezed together so that when the frame is decompressed it "expand[s] back" to its original size without significant loss of the original information.

Nowhere in the intrinsic evidence is "compressed" redefined to include the unique definition provided in Plaintiff's brief. Plaintiff contends that compressing is "reducing the frame, or a portion of the frame (e.g. a frame segment), in at least one dimension (e.g. the width of the frame or frame portion)." (See NG's Markman Brief, pg. 18). There is no dictionary or other reference cited to support this definition. Plaintiff provides no support for the definition that "compressing the frames" alternatively means compressing merely a portion of the frames. No person having ordinary skill in the art would read the claims, or the specification, to reach such a result.

Had the patentee meant to claim compression of merely some portion of the frame, the claim could have easily said so. It did not. Moreover, such an assertion would have been inconsistent with the specification. A review of Figures 3 and 4 of the patents demonstrates that all segments of the circle, square, rectangle and triangle are compressed, not merely a portion. For convenience Figures 3 and 4 are reproduced below.



Moreover, compressing only a portion of a frame would be inconsistent with the specifications of the three patents, which only recite "compress" with "frame," not a part of a frame. (See, e.g., '451 patent, col. 5, ll. 1-3).

Additionally, in the '451 and '178 patents the claimed compression must follow the formula described in the written descriptions. That compression formula is equal to the number of lenticules divided by the number of electronic frames, represented by $\text{compression} = l/f$. The symbol f is defined as the number of frames in the lithographic separation, not some reduced portion of the frames. Nowhere in this formula, the written description of the formula, or the claims is there support for the proposition that compression includes merely reducing a portion of the frame.

Lastly, there is nothing in the prosecution histories for the patents that would indicate the patentee was trying to change the ordinary and customary meaning of "compressed." (Lauer Decl., Exs. H, I, and J). Accordingly, "compressing the frames" means **"squeezing or pressing the rasterized frames without any substantial loss of data."**

b. "Frame[s]"

Step A of each claim requires "creating a plurality of electronic frames." The remaining steps of the claims refer to "the frames" or "each frame." The preambles discuss that the multidimensional image comprises "a plurality of segments created from a plurality of electronic frames." Thus, a frame is one of the whole electronic frames used to create the segments of the interlaced image. These references to frames all refer back to the "electronic frames" of Step A.

This definition is consistent with the intrinsic evidence in the written description. The specification states that the frames begin as either a conventional print or art converted into electronic frames. (See, e.g., '451 patent, col. 2, l. 67 - col. 3, l. 5). Travel Tags agrees with National Graphics' definition of a frame to the extent National Graphics asserts that a "frame" includes the entire image or picture and not some lesser portion of the image. As defined in the specification it is an electronic version of the conventional print or art and not a segment of the entire image. Therefore, "frame" means **"one of the images or pictures used to create the segments of the multidimensional image."**

2. Additional Terms National Graphics Did Not Place in Issue for Which Travel Tags Seeks Construction

There are a number of terms in these three patents that Travel Tags believes are in dispute that were not defined or brought into issue by National Graphics. Travel Tags reserves the right to request a surreply if National Graphics proposes to define these terms in a manner contrary to Travel Tags' proposed definitions.

a. The Specifications Expressly Defined Certain Terms

i. "Nonbinary Pixels"

The written description shows that the patentee has clearly been his own lexicographer in that he specifically defined the term in the specification. "As here used, 'nonbinary pixels' are pixels that have a depth of one or more, and that can be expressed as black, a value of grey or color, or white." ('451 patent, col. 4, ll. 63-65). A pixel is defined as "any of the small discrete elements that together constitute an image." Webster's Ninth New Collegiate Dictionary, p. 897 (1987) (Lauer Decl., Ex. O).

Therefore, "nonbinary pixels" should be defined as **"any of the small discrete elements that together constitute an image, such elements all having depths or values of one or more, and that can be expressed as black, a value of grey or color, or white."**

ii. "Binary Pixels"

The patent provides "'[b]inary pixels' are a subset of nonbinary pixels, and these have a depth of one and as such, can only be expressed as black or white, i.e. on or off." ('451 patent, col. 4, ll. 65-67). Therefore, "binary pixels" should be defined as **"any of the small discrete elements that together constitute an image, such elements all having depths or values that can only be expressed as black or white, i.e. on or off."**

iii. "Moiré Interference"

The patentee specifically defined moiré interference as **"an undesirable pattern resulting from the overlapping of two or more grid patterns including the halftone dots in film**

separation." ('451 patent, col. 3, ll. 51-53). This express definition is consistent with the customary definition and should be used.

iv. "Screen Interference"

Once again the patentee has defined this, stating "[s]creen interference is the broken appearance of detail, lines or image edges caused by halftone dots that are too coarse in comparison to the line or edge being drawn by the halftone dots." ('451 patent, col. 3, ll. 54-57). This definition should be used.

b. Other terms not defined by patentee

i. "Each Frame"

The term "each" is part of an element of all the claims asserted in the '451, '178, and '808 patents. The term is used in reference to the electronic frames referenced in Step A of all the asserted claims. "Each" is defined as being "one of two or more distinct individuals having a similar relation and often constituting an aggregate." Webster's Third International Dictionary, p. 713 (1993) (Lauer Decl., Ex. N). In this case, the distinct individuals are the electronic frames. "One page is created for each frame from which the composite image will be generated." ('451 patent, col. 4, ll. 30-31). "The rasterized frames are then decompressed such that the compression of each frame is a function of the number of frames in the lithographic separation." ('451 patent, col. 5, ll. 1-3). When a step is performed on each frame, the step is performed on every individual frame. Therefore, the term "each frame" should be defined as **"every frame of the aggregate series of two or more distinct frames that are ordered to create the lenticular image."**

ii. "Rasterize"

The term "rasterize" is a technical term not found in most common dictionaries that were in circulation at the time these patents were applied for. Under such circumstances, a court should use a technical dictionary. AFG Indus., Inc. v. Cardinal IG Co., 239 F.3d 1239, 1247 (Fed. Cir. 2001). A technical treatise contemporaneous in time to at least the '808 patent defined "rasterize" as "to

convert an image into a bitmap of the right size and shape to match a raster graphics output device." Dictionary of Computer and Internet Terms, p. 386 (6th ed. 1998) (Lauer Decl. Ex. Q).

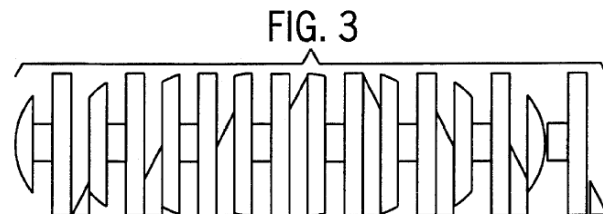
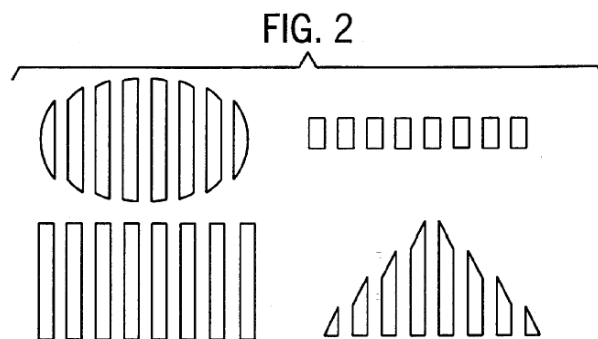
These customary definitions are consistent with how the word is described and used in the written description of the patent. The specification provides that each page is "then rasterized," i.e., it is converted into a pixel array. This process can be accomplished through any one of a number of different software raster imaging processing (RIP's) programs" ('451 patent, col. 4, ll. 44-48). And again at col. 4, ll. 48-53, "each frame is rasterized at a nonbinary pixel resolution." Therefore "rasterize" is defined as **"converting an image into a nonbinary bitmap of pixels of the right resolution to match a raster graphics output device."**

iii. **"Convert"**

To "convert" is to **"change or turn from one state to another; alter in form, substance, or quality; transform."** Webster's Third International Dictionary, p. 499 (1993) (Lauer Decl., Ex. N). In the claims the nonbinary pixels of the compressed frames are "converted" to binary pixels. Conversion requires change. The specification supports this customary definition of convert. "After ordering, each frame is . . . rasterized, compressed and then converted from nonbinary pixels to binary pixels." ('451 patent, col. 3, ll. 8-10).

iv. **"Interlacing the Frames in the Desired Sequence of Step (B)"**

Interlace is commonly defined as to "unite by or as if by lacing together; interweave." Webster's Third International Dictionary, p. 1179 (1993) (Lauer Decl., Ex. N). The term "interlace" is illustrated in the written description of the patent. Figures 2 and 3 illustrate of the concept of interlacing.



"After the nonbinary pixels of the compressed frames are converted to individual color plates of binary pixels, the individual frames are interlaced into a composite file." ('451 patent, col. 6, ll. 1-3) The individual frames are laced together or interweaved to create the composite file. As described in the specification, "[e]ach frame is then segmented as illustrated in FIG. 2, and the individual segments then ordered into segments of the composite image. As illustrated in FIG. 3, the first segment of the composite image consists of the first segment of each of the base images in the order in which the base images are sequenced." ('451 patent, col. 7, ll. 10-16). The specification shows that "interlacing the frames in the desired sequence of step (B) **means "taking segments of each frame, then placing the corresponding segments of each frame in the desired sequence of step (B)."**

3. The Steps Must be Completed in the Sequence Provided

National Graphics contends that the steps recited in the method claims need not be performed in the order written. This conclusion ignores the prosecution history, specification, and even the claims themselves. For convenience, this section will discuss the sequence issue with regard to claim 1 of the '808 patent (Lauer Decl., Ex. D). However, this analysis, and the corresponding result, is the same for all the claims asserted.

As discussed previously, the first step is to determine whether, as a matter of grammar or logic, the steps must be performed in the order written. Before even referring to the specification or file history, a review of the claim steps makes manifest that the patentee intended that these steps occur in the order written.

- Step B requires ordering the frames into a desired sequence. As discussed in Orsbak the term "the" is an antecedent basis term which by necessity refers back to something previous, i.e. the frames. Step A requires "creating a plurality of electronic frames." Step B by logic and grammar must follow Step A.
- Step C logically follows the requirements of Step A because it requires "each frame" to be rasterized. Similar to the situation in Loral, the plurality of electronic frames must already exist for the patentee to rasterize each frame.
- Step D must follow Step C because to "compress" the frames the electronic frames must already exist in rasterized form.
- The continued use of the term "the" requires that Step E must occur after both Steps C and D, as Step E refers to converting the nonbinary pixels of the compressed frames into binary pixels. The frames must already be compressed, and the nonbinary pixels of the compressed frames must already be in existence, for this conversion to occur.
- Step F on its face must follow step B.
- Step G must follow Step F as the step refers to "the" interlaced frames. The interlaced frames only exist once Step F is performed.
- Step H by definition must occur after Step G as the step produces an image from "the" imaging device of Step G.

As shown above, the claims, by themselves, indicate that the patentee required the steps to be performed in the order recited, at least to the extent itemized above.

When the second part of the Federal Circuit test is applied, determining whether the specification directly or implicitly requires the steps be performed in sequence, there is no question that the patentee required all of the steps be performed in the exact order recited. Between the abstract and the written description the sequence of this method claim is described a minimum of five times. ('451 patent, Abstract page 1; col. 1, l. 66 - col. 2, ll. 14; col. 2, l. 66 - col. 3, 14; col. 4,

l. 25 - col. 6, l. 40; col. 7, l. 8-20). In each description the steps follow the same order and there is no discussion that they can be performed in any other order. No other, discussed or implied, sequence of steps is outlined in the patent.

This sequence is not merely preferred, it is dictated by the specification:

- "Once all of the information . . . is in electronic or pixel form, then an electronic page is created" ('451 patent, col. 4, ll. 25-27)(emphasis added);
- "Once each electronic frame is assembled, then the pages are ordered into a desired sequence" ('451 patent, col. 4, ll. 31-33)(emphasis added);
- "Whether saved or not, each assembled page is then rasterized" ('451 patent, col. 4, ll. 43-44)(emphasis added);
- "The rasterized frames are then compressed" ('451 patent, col. 5, l. 1)(emphasis added); and
- "The nonbinary pixels of the compressed frames are then converted to individual color plates of binary pixels." ('451 patent, col. 5, ll. 17-18)(emphasis added).

These are just some of the examples of where the patentee requires one claimed step to occur before the next claimed step.

Another example of the specification clearly requiring a set sequence is the sentence, "[a]fter the nonbinary pixels of the compressed frames are converted to individual color plates of binary pixels, the individual frames are interlaced into a composite file." ('451 patent, col. 6, ll. 1-3). The patentee requires the interlacing of each individual frame "after" the nonbinary pixels of the compressed frames are converted to binary pixels. The specification supports reading the claims to require the steps to be performed in the sequence provided.

The prosecution history further supports a requirement that the steps occur in the sequence recited. See Loral Fairchild, 181 F. 3d at 1321-22. In response to a PTO Office Action denying the claims because they were anticipated by a prior patent, the patentee emphasized that the claims

require conversion of the "compressed frames," which therefore requires the compression step (D) to occur before the conversion step (E):

"The present invention relates to the conversion of non-binary pixels to binary pixels for printing, which is a completely different technology from the photographic process of Taguchi et al. Converting the non-binary pixels of the compressed frames to binary pixels is specifically claimed in step E of claim 11 [which was renumbered as claim 1 of the '808 Patent].

Furthermore, none of the prior art cited thus far with respect to this application and the two previous applications from which this application claims priority, discloses the conversion to binary pixels before the interlacing of the frames."

(Lauer Decl., Ex. J, pp. 58-59) (emphasis added)

Except for the alphabetically ordering of the steps, Step F of the claim does not on its face require conversion (Step E) before interlacing (Step F). However, the patentee argued that the claim was allowable because the prior art did not disclose this order. Thus, by asserting that the claims require that Step E be performed before Step F, the patentee advised the PTO that the steps must be performed in the recited alphabetical order. The PTO relied on this statement and allowed the claims. Statements made to overcome prior art are binding on the patentee and cannot be erased at a later date to get back what the patentee specifically gave up. See Gentry Gallery Inc. v. Berkline Corp. 134 F.3d 1473, 1477 (Fed. Cir. 1998).

National Graphics' cursory discussion of the prosecution history suggests that the patentee was simply making an offhand observation rather than trying to get his claims allowed over the prior art. The patentee's own words belie this assertion. The statement in the prosecution history was written to overcome prior art that the PTO cited as anticipating the claimed invention. By distinguishing the prior art based on the performance of the sequence of steps, National Graphics clearly disclaimed any method that did not perform these steps in the recited order. See C.R. Bard, Inc. v. U.S. Surgical Corp., 2004 U.S. App. LEXIS 22738 *32-33 (Fed. Cir. Oct. 29, 2004)

(arguments made during prosecution to distinguish prior art serve to define claim terms).⁶

Moreover, National Graphics' arguments do not address any of the limiting language internal to the claims themselves.

All intrinsic evidence leads to the conclusion that the steps recited in the claims of the '808, '451 and '178 patents must be performed in the sequence provided. National Graphics' representations about the required order of the claims during the prosecution of the '808 patent are equally binding on the related '451 and '178 patents. See Microsoft Corp. v. Multi-Tech Sys., 357 F.3d 1340, 1349-50 (Fed. Cir. 2004).

National Graphics' statement at footnote 9 of its brief, "*See* Figs. 1-4 illustrating that 'compressing' can follow 'interlacing,'" contradicts the words of the specification. The description of the drawings in the specification shows that the patentee made clear these drawings were not intended to illustrate that compressing can follow interlacing. The specification states the following after referring to Fig. 1:

[e]ach base image is then rasterized, compressed and converted from nonbinary pixels to binary pixels (these steps not illustrated by the figures).

('451 patent, col. 7, ll. 12-14)(emphasis added). Therefore, it is erroneous to claim that Figures 1-4 demonstrate compression can occur after interlacing. The patentee made clear that the compression step of the claimed method is not shown in the figures.

The specification makes it perfectly clear that the sole purpose of Figures 3 and 4 is to illustrate and depict the concepts of interlacing and compression, not to describe the steps of the claimed method. The specification states: "FIG. 3 is an illustration of a sequence of frames comprising segments of the base images illustrated in FIGS. 1 and 2. FIG. 4 is a schematic depiction of the frames of FIG. 3 compressed to register with the lenticules of a lenticular lens." ('451 patent, col. 2, ll. 62-67) (emphasis added).

⁶ For the Court's convenience, a copy of this decision is included as Lauer Decl., Ex. U.

Therefore, a full and fair reading of the specification, including the figures, shows that: (1) compression as claimed is "not illustrated in the figures;" and (2) the figure showing a form of compression does so merely, only, and solely for the purpose of illustrating the concept. National Graphics' claim that the figures show an alternate order for the claimed method contradicts the specification and should be rejected.

B. Terms in Dispute in the '092 Patent, Lenticular Images on a Curved Surface

1. Terms National Graphics Placed in Issue

National Graphics addressed three terms of the Curved Surface Patent. Travel Tags will likewise address these terms. However, for convenience and clarity, Travel Tags' analysis begins with some of the individual terms in these phrases, rather than the phrases as a whole. Travel Tags submits that this approach clarifies the meaning of the terms at issue. Such an approach also reveals inconsistencies in National Graphics' proposed claim construction. These inconsistencies include defining the same term differently in two different phrases (e.g., "determining") and defining a term in one phrase and ignoring it in the next (e.g., "resolution").

a. "Determining"

Independent claim 1 uses the term "determining" twice, with regard to determining two resolutions: a base resolution and a curved surface. Logically, the term "determining" should be construed to have the same meaning in both uses. The Federal Circuit requires such consistency. Digital Biometrics, Inc. v. Identix, Inc., 149 F.3d 1335, 1345 (Fed. Cir. 1998) ("the same word appearing in the same claim should be interpreted consistently").

The relevant definition of the term "determine" is to "establish or ascertain definitely, as after consideration, investigation, or calculation." See The American Heritage Dictionary of the English Language, 495 (4th ed. 2000) (emphasis added) (Lauer Decl, Ex. P). Thus, the term "determine" requires performing an investigation that results in ascertaining an answer that has definiteness to it.

The specification is consistent with this definition. The specification uses the term "determining" in the context of "*determining* a base resolution of the lens" and "*determining* a resolution of the lens when the lens is configured to conform to the curved surface." Both of these phrases use the term "determining" a resolution to mean the affirmative act of ascertaining a resolution.

The "consideration, investigation, or calculation" contemplated by the Curved Surface Patent is a measurement. The specification identifies a tool for such measurement, a "resfinder." (col. 4, ll. 57-61). Accordingly, the term "determining" in the specification relates to an affirmative investigative act (i.e., a measuring) that provides a definite answer (i.e., a resolution). Thus, "determining" means **"to establish or ascertain definitely by measurement."**

In the context of "determining a resolution of the lens when the lens is configured to conform to the curved surface," National Graphics apparently admits that "determining" means "measuring, accounting for, or resolving." (See NG's Markman Brief, p. 24) (emphasis added). However, National Graphics asserts that the term "determining" has another meaning when referring to the "base resolution." In that context, National Graphics suggests that term "determining" means "confirming, ascertaining, or settling upon." (NG's Markman Brief, p. 21). National Graphics' inconsistent constructions are insupportable for several reasons.

First, if National Graphics meant something different for the two "determining" steps, it should have used different words. The term "determining" must have the same meaning in both instances. Digital Biometrics, 149 F.3d at 1345.

Second, despite National Graphics' statements to the contrary, the specification does not support a definition of "determining" that does not include the affirmative act of "measuring" a resolution. In every instance in the specification, the terms "determine" and "determining" refer to a measuring step. In fact, the specification explicitly states that "determining a base resolution" is

different from getting a resolution without measurement (i.e., simply by obtaining the resolution from the manufacturer). In particular, the specification states:

Even if the resolution is known from the manufacturer of the lens, often an independent confirmation of the resolution is desirable because it is a factor in constructing and manipulating the interlaced, composite image. Furthermore, manufacturing always introduces a variance to one extent or another, and thus, it is desirable⁷ to determine the base resolution.

(Col. 4, lines 50-56) (emphasis added). Thus, the specification clearly distinguished "determining a base resolution" from obtaining a resolution without performing an independent measurement. National Graphics' cannot expand the term "determining" to cover that which was specifically disclaimed in the specification. See Resqnet.com, Inc. v. Lansa, Inc., 346 F.3d 1374, 1378 (Fed. Cir. 2003) ("A specification may limit the scope of a claim if the patentee has disavowed or disclaimed the scope by using words or expressions of manifest exclusion or restriction, representing a clear disavowal of claim scope.").

Therefore, Travel Tags proposes that the term "determining" has the same meaning for both occurrences of that term in claim 1 of the Curved Surface Patent. That meaning is **"to establish or ascertain definitely by measurement."**

b. "A Base Resolution"

The term "resolution" is explicitly defined in the specification as a value of "the number of lenticules per inch." (col. 4, lines 49-50). Accordingly, Travel Tags agrees with National Graphics that the term "resolution" means "a value of lenticules per unit of linear length of a lenticular lens."

National Graphics' does not propose a definition of "base." The term "base resolution" describes the first type of resolution that is to be determined. The relevant dictionary defines "base"

⁷ National Graphics' brief emphasizes the term "desirable" in an attempt to convince the Court that independent confirmation is "desirable," but not necessary. It is true that the specification states that such a determination is desirable. The specification, however, cannot eliminate claim requirements. The claims require the step of "determining a base resolution," and National Graphics cannot now argue that such a step is merely optional. If independent confirmation was not necessary, National Graphics could have left that requirement out of the claims.

as "the point or line from which a start is made in an action or undertaking." See Webster's Third International Dictionary, pp. 180-81 (1993) (Lauer Decl., Ex. N). Thus, the term "base" means a "beginning" point. In addition, since the term "a base resolution" is singular, the term refers to a single resolution.

This is consistent with the specification, which indicates that the "a base resolution" is a resolution of the lens in a starting position before it is curved (i.e., planar configuration). (col. 5, lines 15-25). Accordingly, Travel Tags submits that "a base resolution" means **"a single beginning or starting value of lenticules per linear length of a lenticular lens."**

c. "A Resolution of the Lens When the Lens is Configured to Conform to the Curved Surface"

The second resolution to be determined under the claims is that of the lens when the lens is configured to conform to the curved surface. This resolution is different from the starting, or base, resolution. (col. 6, lines 54-57).

The same construction of the term "resolution" is required in this step as in the step of determining the base resolution of the lens. Accordingly, "resolution" means "the number of lenticules per inch." (col. 4, lines 49-50). In addition, since the term "a resolution" is singular, only one resolution is to be determined.

The term "curved surface" means "the surface that the interlaced image is applied to, with the surface being curved." This construction is required by claim 1 itself, which recites: "[a] method for preparing an interlaced image for application to a curved surface."

The term "configure" means "to design, arrange, set up, or shape with a view to specific applications or uses." See The American Heritage Dictionary of the English Language, p. 386 (4th ed. 2000) (Lauer Decl., Ex. P). The term "conform" means "to correspond in form or character." Id.

Accordingly, "a resolution of a lens when the lens is configured to conform to the curved surface" means **"a single value of lenticules per unit of linear length of a lenticular lens that is arranged to correspond in form to the curved surface."**

The specification is consistent with this construction. The specification describes taking one or more measurements with a "resfinder" to determine a value of the resolution when the lens is arranged to correspond in form with the curved surface. (col. 6, line 61 through col. 7, line 8). The specification indicates that multiple resolutions may be desired, but it does not require multiple resolutions. The claim language itself requires only one value of the curved surface resolution, and the specification provides support for determining a single value of the curved surface resolution.

National Graphics' argument in its Markman Brief discusses at length the goals of the inventor in solving the problem of using lenticular lenses on curved surfaces. However, it is not the specification that defines the scope of the claims, but the claim language itself. National Graphics cannot rely on the specification to obtain claim coverage that it did not get from the PTO. See Novo Nordisk of N.Am. v. Genetech, Inc., 77 F.3d 1364, 1369 (Fed. Cir. 1996) ("While claims are to be interpreted in light of the specification, all that appears in the specification is not necessarily within the scope of the claims and thus entitled to protection. What is not claimed, even though disclosed as part of the "invention," cannot be enjoined.").

In any event, National Graphics' proposed construction for the phrase "determining a resolution of the lens when the lens is configured to conform to the curved surface" is flawed from the start because it completely ignores constructions that National Graphics separately proposed for some of the same claim terms elsewhere in the claims. National Graphics' proposed constructions for the term "resolution" (in the phrase "determining the base resolution of the lens") and the term "conform" (standing alone). (See NG's Markman Brief, pgs. 24 and 27-28). Yet those proposed constructions are absent from its proposed construction of a phrase that includes both of those

terms. National Graphics' analysis ignores the basic tenet that the same word must mean the same thing in the same claim. Digital Biometrics, 149 F.3d at 1345. Moreover, National Graphics also ignores the singularity of the term "resolution," as used in the claim.

National Graphics cannot ignore the plain language of the claims. Thus, the term "a resolution of a lens when the lens is configured to conform to the curved surface" means **"a single value of lenticules per unit of linear length of a lenticular lens when the lens is arranged or shaped to correspond in form to the curved surface."**

2. Additional Terms National Graphics Did Not Place in Issue for Which Travel Tags Seeks Construction

There are terms that should be construed which were not defined or brought into issue by National Graphics. As National Graphics has not provided definitions of these terms, Travel Tags reserves the right to request a surreply if National Graphics proposes to define these terms in a manner contrary to Travel Tags' proposed definitions.

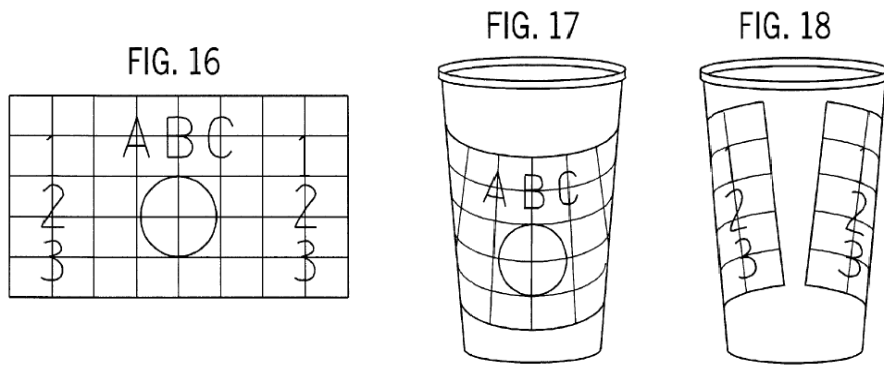
a. "Interlaced Image"

The specification defines the term "interlaced image" as meaning "an image that is formed from two or more base or component images." (col. 5, lines 38-40). Thus, the term "interlaced image" means **"an image that is formed from two or more frames with image segments interwoven together."**

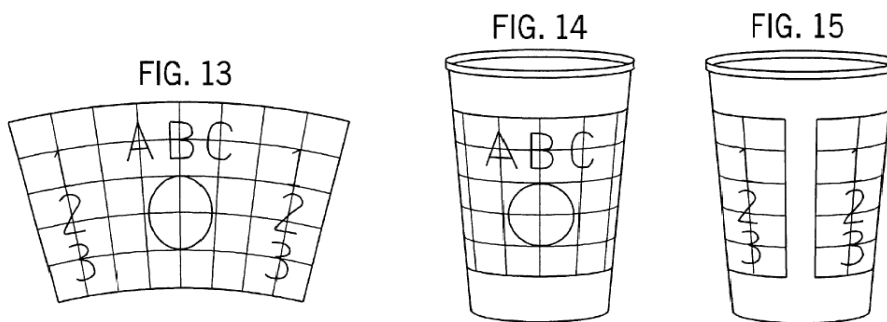
b. "Manipulating the Interlaced Image"

The specification describes "manipulation" as including "mapping" or "warping" the image to match the resolution of the lens in its "ultimate non-planner [sic; non-planar] configured state." (col. 7, lines 3-20). No other means of manipulation are described.

The manipulation step can be understood by comparing Figures 13-15 with Figures 16-18. Figures 16-18 illustrate an image that has not been manipulated, while Figures 13-15 show the same image after manipulation. (col. 4, ll. 18-38). For convenience, those figures are reproduced below.



Figures 16-18 (image before manipulation)



Figures 13-15 (image after manipulation)

As recited in the claims, the manipulation (i.e., mapping or warping) of the image causes the image to conform to the resolution of the lens as applied to the cup. If the image is not mapped or warped, the image will not properly conform to the resolution of the lens as applied to the cup. See Figure 18.

In addition, the manipulation must be performed on the "interlaced image." Therefore, the image must be interlaced before manipulation. See Orsbak v. General Instrument Corp., 2001 U.S. Dist. LEXIS 22671, *7 (N.D. Ill. February 14, 2001) ("Transmitting the multiplexed channels' has to occur after multiplexing takes place, otherwise the reference to "the multiplexed channels" would be meaningless.").⁸

Thus, "manipulation the interlaced image" means **"mapping or warping the image after it is interlaced."**

⁸ For the Court's convenience, a copy of this decision is included as Lauer Decl., Ex. T.

c. **"To Conform With The Resolution of the Lens as Applied to the Curved Surface"**

This limitation identifies the result for which the interlaced image is manipulated. The interlaced image is manipulated to "conform with the resolution" when the lens is curved. As noted above, the term "conform" means "to correspond in form or character." See The American Heritage Dictionary of the English Language, p. 387 (4th ed. 2000) (Lauer Decl., Ex. P). The curved surface resolution was determined in the previous step of determining the resolution of the lens when the lens is configured to conform to the curved surface, and is used in this step as the basis for the manipulation of the interlaced image. In addition, this limitation refers to "the resolution of the lens as applied to the curved surface," which requires that there is only one resolution to which the image is conformed in the manipulation step. Thus, there is only one resolution that is used as the basis for the manipulation step.

National Graphics proposed a construction for the word "conform" from this phrase without regard to the meaning of "conform" and without regard to that which is being conformed to (i.e., the resolution of the lens as applied to the curved surface). Its definition should be rejected.

Accordingly, "to conform with the resolution of the lens as applied to the curved surface" means **"to correspond in form to the single value of lenticules per unit of linear length of the lenticular lens when the lens was arranged or shaped to correspond in form to the curved surface."**

d. **"Such that the Lenticules of the Lens are in Correspondence with the Segments of the Image"**

In addition, the manipulation step must cause the lenticules of the lens to be in "correspondence" with the segments of the image. As defined in the specification, "correspondence" refers to an alignment between the lenticules and the image segments, and occurs

when "each segment of the interlaced image is covered by one lenticule and that the lenticule and segment are substantially congruent with one another." (col. 6, lines 25-31; Figure 4).

Accordingly, the phrase "such that the lenticules of the lens are in correspondence with the segments of the image" means **"such that each segment of the interlaced image is covered by one lenticule and that the lenticule and segment are substantially congruent with one another."**

C. Terms in Dispute in the '196 Patent, A Method for Making Molded Articles Having a Lenticular Image on its Surface

National Graphics has not identified any terms in dispute for the ' 196 patent. However, Travel Tags believes there are a number of terms that should be construed. As National Graphics has not provided definitions of these terms, Travel Tags reserves the right to request a surreply if National Graphics proposes to define these terms in a manner contrary to Travel Tags' proposed definitions.

1. "Minimizes any Distortion to the Lenticular Lens and any Degradation to the Interlaced Image"

The term "minimize" means to "reduce to the smallest amount, extent, size, or degree." See The American Heritage Dictionary of the English Language, p. 1119 (4th ed. 2000) (Lauer Decl., Ex. P). Thus, to minimize distortion and degradation means to "reduce distortion and degradation to the smallest amount."

This minimization is required with regard to both "distortion" and "degradation," since the claims refer to them in the conjunctive (i.e., using the conjunction "and"). Moreover, the limitation requires that any distortion and any degradation be minimized. The word "any" means "one, some, every, or all without specification." See The American Heritage Dictionary of the English Language, p. 81 (4th ed. 2000) (Lauer Decl., Ex. P). Therefore, the claims require that all distortion and degradation be reduced to the smallest amount.

The prosecution history supports the above interpretation of the term "minimize," the conjunctive "and," and the inclusion of all distortion. The PTO rejected as obvious a claim that required "little, if any" of distortion "or" degradation. By amending its claims, National Graphics settled on a much narrower scope of coverage—a claim that requires the minimization of any distortion and degradation.

The Examiner originally rejected each of the pending claims as being obvious over U.S. Patent No. 5,494,445 (Sekiguchi, attached as Lauer Decl., Ex. R) in view of Japanese Patent Document JP 5-112351 (JP '351, attached as Lauer Decl., Ex. S). At that time, claim 1 and dependent claim 4 read as follows:

Independent Claim 1

1. A method for making a molded article, the method comprising the steps of:
 - A. providing a mold in which to form the molded article;
 - B. inserting a lenticular image into the mold;
 - C. introducing a molten plastic into the mold to form the molded article with the lenticular image attached to a surface of the molded article; and
 - D. removing the molded article with the attached lenticular image from the mold.

Dependent Claim 4

4. The method of claim 1 in which the molten plastic is introduced at a temperature and pressure so as to result in little, if any, of at least one of distortion to the lenticular lens and degradation to the underlying image.

(emphasis added).

The Examiner asserted that in-mold label production was old and that substituting a lenticular label would be an obvious design decision. (See Lauer Ex. L, pp. 92-94). The Examiner also referred to the obviousness of the limitations of claim 4, noting: "[c]learly, one of ordinary skill in the art would choose injection molding parameters which would not distort or damage either the interlaced image or lenticular lens." (See Lauer Decl., Ex. L, p. 93).

National Graphics then amended claim 1 to the form in which it issued and canceled claim 4. Significantly, National Graphics amended step C of original claim 1 to include language similar to, but much more narrow than, the language previously recited in original claim 4. Step C was amended to replace "little, if any, of at least one of distortion to the lenticular lens and degradation to the underlying image" with "minimizes any distortion to the lenticular lens and any degradation to the interlaced image." (See Lauer Decl., Ex. L, pp. 98-105) (emphasis added).

By this change, National Graphics clearly disclaimed subject matter that has "little" distortion or degradation. Loral Fairchild Corp. v. Sony Corp., 181 F. 3d 1313, 1326 (Fed. Cir. 1999). Thus, National Graphics claims only cover methods whereby molten plastic is introduced at a temperature, pressure, and turbulence that results in the smallest amount of any distortion or degradation. Moreover, to infringe, the product must minimize both distortion and degradation.

Accordingly, the term "minimizes any distortion to the lenticular lens and any degradation to the interlaced image" means to **"reduce all distortion to the lenticular lens and reduce all degradation to the interlaced image to the smallest amount."**

2. "Turbulence"

The term "turbulence" means to "the state or quality of being turbulent." See The American Heritage Dictionary of the English Language, p. 1857 (4th ed. 2000) (Lauer Decl, Ex. P).

"Turbulent" means "violently agitated or disturbed." Id. Thus, the ordinary meaning of "turbulence" is "the state or quality of being violently agitated or disturbed." Nothing in the intrinsic evidence is inconsistent with this definition of turbulence. Accordingly, "turbulence" means "the state or quality of being violently agitated or disturbed."

V. **CONCLUSION**

For these reasons, Travel Tags respectfully requests that the Court interpret the disputed claims terms as set forth above. See also Lauer Decl. Ex. A (listing the claim terms and the proposed constructions).

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